

AMENDMENTS TO THE CLAIMS:

The following listing of claims supersedes all prior versions and listings of claims in this application:

1. (Currently Amended) A data relay device, the device comprising: having receiving means for receiving payload data from a data source[[,]]; a buffer store for storing payload data for subsequent transmission[[,]]; means for directly receiving a scalar status [[data]] value from similar data relay devices[[,]] when within communication range thereof;

status data generation means for generating status data, the status data being derived from the quantity of data in the buffer store and the scalar status [[data]] value received directly from other devices, and comprising data relating to (a) [[the]] separation distance of the device from other devices, and (b) the quantity of data in the buffer store;

means for determining a scalar status value determined by the quantity of data stored in the buffer and its separation distance from other neighboring devices within communication range thereof; ~~nearby sensors,~~

status transmitter means for directly transmitting the scalar status value to other neighboring devices within communication range thereof;

David P. ROBINSON, *et al.*
Serial No. 10/568,496
January 29, 2009

selection means for identifying, from the scalar status ~~[[data]]~~ values directly received from other devices, a receiving device having a scalar status value which varies from its own scalar status value in a predetermined manner ~~indicative~~ indicating that payload data may be forwarded to it~~[[,]]~~_i and

payload transmission means for transmitting the payload data directly to the identified receiving device.

2. (Original) A data relay device according to claim 1, comprising means for receiving payload data transmitted by other similar devices.

3. (Previously Presented) A data relay device according to claim 1, further comprising a data source.

4. (Previously Presented) A data relay device according to claim 1, wherein the selection means is arranged to only identify a suitable receiving device if the scalar status value meets one or more threshold criteria.

5. (Original) A device according to claim 4, wherein a threshold criterion is that the remaining battery power is at least sufficient to transmit all the data currently in the buffer.

6. (Previously Presented) A device according to claim 4, having means for selecting a threshold criterion as a function of elapsed time from a predetermined start point.

7. (Currently Amended) A data relay device according to claim 1, further comprising condition-monitoring means for ~~monitoring the~~ monitoring expected lifetime of the device, and adjusting the scalar status value accordingly.

8. (Currently Amended) A device according to claim 1, wherein the separation distance between devices is determined from the power required to make a transmission between them.

9. (Previously Presented) A device according to claim 1, comprising means for determining the power that would be required to transmit payload data to an identified receiving device, and means for generating a scalar status value related to that power requirement.

10. (Original) A device according to claim 9, wherein the identified receiving device on which the power determination is based is the device selected for transmission on a previous determination.

11. (Currently Amended) A device according to claim 9, wherein the scalar status value h is determined by the value $(N + k) C / B$

where N = number of packets of data currently in the buffer,

B = battery level,

C = power requirement of forwarding to the identified receiving device $[[.]]$, and

k is a constant.

12. (Currently Amended) A method of operating a plurality of data relay devices, said method comprising:

collecting payload data in buffer stores in ~~one or more such~~ each of plural data relay devices $[[.]]$;

exchanging scalar status $[[data]]$ values between the devices, the scalar status data ~~comprising~~ value for each being based on data relating to at least (a) the separation between the devices, and (b) the quantity of data in their buffer stores;

each device defining, from ~~[[the]]~~ its status data, a scalar status value determined, at least in part, by the quantity of data stored in ~~[[the]]~~ buffer and its separation distance from other ~~sensors~~ of said data relay devices within communication range thereof;

directly transmitting the scalar status value to other of said data relay devices within communication range thereof and receiving the scalar status values of such other devices directly therefrom;

identifying, from the scalar status ~~[[data]]~~ values received from such other devices, a receiving device having a scalar status value which varies from its own status value in a predetermined manner ~~indicative~~ indicating that payload data may be forwarded to ~~[[it,]]~~ this particular device; and

directly transmitting the payload data to the identified receiving device.

13. (Original) A method according to claim 12, wherein data is only transmitted from a first device to a second device located in its forwarding direction if the scalar status value derived from the status data meets one or more predetermined threshold criteria.

14. (Original) A method according to claim 13, wherein a threshold criterion is that the remaining battery power is at least sufficient to transmit all the data currently in the buffer.

15. (Previously Presented) A method according to claim 12, wherein the status data includes a measure of the expected lifetime of the device.

16. (Previously Presented) A method according to claim 12, wherein payload data is transmitted, by means of one or more of the wireless relay devices, to a target sink device defined by a predetermined scalar status value.

17. (Previously Presented) A method according to claim 12, wherein the power that would be required to transmit payload data to an identified receiving device is determined, and a scalar status value is generated related to that power requirement.

18. (Original) A method according to claim 17, wherein the identified receiving device on which the power determination is based is the device selected for transmission on a previous determination.

19. (Currently Amended) A method according to claim 17, wherein the scalar status value h is determined by the value $(N + k) C/B$

where N = number of packets of data currently in the buffer,

B = battery level,

C = power requirement of forwarding to the identified receiving device, and

k is a constant.

20. (New) A method of collecting data from distributed mobile data sensors respectively associated with mobile data relay devices communicating with each other in an ad hoc mobile network within they happen to be within communication range of each other, said method comprising:

collecting sensor data in buffer stores of each said mobile data relay device;

generating a scalar status value in each said mobile data relay device based on current local status parameters including at least the amount of collected sensor data currently accumulated in its buffer store and its separation distance from other of said mobile data relay devices;

communicating respective said scalar status values between said mobile data relay devices that happen to be within communication range of each other;

at each said mobile data relay device, evaluating received scalar status values from other devices with respect to its own scalar status value; and

David P. ROBINSON, *et al.*
Serial No. 10/568,496
January 29, 2009

if said evaluation satisfies a predetermined condition for an identified one of the other devices, then transmitting at least part of its accumulated sensor data from its buffer store to said identified other device where the received sensor data is stored in its buffer store for later similar transfer to yet another device.

21. (New) A method as in claim 20, wherein:

at least one higher powered data sink station also communicates with said mobile data relay devices when they happen to be within communication range; and

said data sink station communicates a scalar status value which, when received by a data relay device, will be evaluated so as to cause the data sink station to be identified as the recipient of accumulated sensor data from the buffer store of that data relay device.